

Serial No. 10/728,801  
Filed: December 8, 2003

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

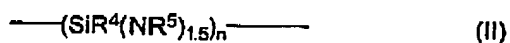
1. (canceled)
2. (canceled)
3. (canceled)
4. (previously presented) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is a polysiloxazane having a number average molecular weight of 300 to 100,000 that contains, as its main repeating unit,  $-(RSi(NR^6)_{1.5})-$ ,  $-(RSi(NR^6)O_{0.5})-$ ,  $-(RSi(NR^6)_{0.5}O)-$ ,  $-(RSiO_{1.5})-$  or  $-(SiO_2)-$ , wherein R and  $R^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, an alkylamino group or an alkylsilyl group, and wherein  
said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester.
5. (previously presented) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is

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a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, and wherein said photoacid generator is a peroxide.

6. (original) The photosensitive polysilazane composition according to claim 5 wherein said peroxide is selected from t-butyl peroxybenzoate, 3,3',4,4'-tetra(t-butylperoxycarbonyl)benzophenone or  $\alpha,\alpha'$ -bis(t-butylperoxy)diisopropylbenzene.

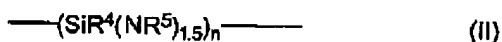
7. (canceled)

8. (previously presented) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is

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a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, wherein

said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester; and wherein

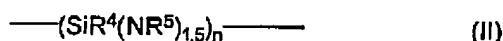
said composition further contains a sensitizing dye [[is]] selected from coumarin, ketocoumarin and their derivatives and thiopyrylium salts.

9. (previously presented) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is

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a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, wherein

said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester, and wherein

said composition further contains an oxidation catalyst.

10. (original) The photosensitive polysilazane composition according to claim 9 wherein said oxidation catalyst is palladium propionate.

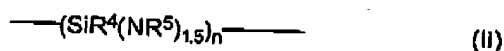
11. (previously presented) A method of forming a patterned insulating film comprising: a step in which a coated film is formed of a photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, a step in

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which said coated film is exposed to light in a pattern, a step in which the exposed portion of said coated film is dissolved off, and a step in which the patterned polysilazane film formed as a result of said dissolving off is allowed to stand in an ambient atmosphere or baked to convert it to a silica-based ceramic coating, wherein said polysilazane or its modification is

a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(R\text{Si}(\text{NR}^6)_{1.5})-$ ,  $-(R\text{Si}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(R\text{Si}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(R\text{SiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, and wherein

said photoacid generator is a peroxide.

12. (original) The method according to claim 11, wherein said polysilazane is a polysilazane having a number average molecular weight of 100 to 100,000 that mainly contains the skeleton represented by general formula (II).

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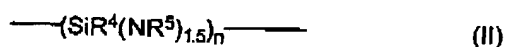
13. (original) The method according to claim 12, wherein in general formula (II),  $R^4$  is a methyl group or phenyl group, and  $R^5$  is a hydrogen atom.
14. (previously presented) A method of forming a patterned insulating film comprising: a step in which a coated film is formed of a photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, a step in which said coated film is exposed to light in a pattern, a step in which the exposed portion of said coated film is dissolved off, and a step in which the patterned polysilazane film formed as a result of said dissolving off is allowed to stand in an ambient atmosphere or baked to convert it to a silica-based ceramic coating, wherein said polysilazane or its modification is
- a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(RSi(NR^6)_{1.5})-$ ,  $-(RSi(NR^6)O_{0.5})-$ ,  $-(RSi(NR^6)_{0.5}O)-$ ,  $-(RSiO_{1.5})-$  or  $-(SiO_2)-$ , wherein R and  $R^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, and wherein
- said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester.
15. (original) The method according to claim 11, wherein said peroxide is selected from t-butyl peroxybenzoate, 3,3',4,4'-tetra(t-butylperoxycarbonyl)benzophenone or  $\alpha,\alpha'$ -bis(t-butylperoxy)diisopropylbenzene.
16. (canceled)

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17. (previously presented) A method of forming a patterned insulating film comprising: a step in which a coated film is formed of a photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, a step in which said coated film is exposed to light in a pattern, a step in which the exposed portion of said coated film is dissolved off, and a step in which the patterned polysilazane film formed as a result of said dissolving off is allowed to stand in an ambient atmosphere or baked to convert it to a silica-based ceramic coating, wherein said polysilazane or its modification is

a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, wherein

said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester, and wherein

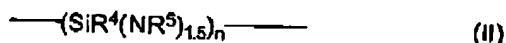
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said photosensitive polysilazane composition further contains a sensitizing dye selected from coumarin, ketocoumarin and their derivatives and thiopyrylium salts.

18. (previously presented) A method of forming a patterned insulating film comprising: a step in which a coated film is formed of a photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, a step in which said coated film is exposed to light in a pattern, a step in which the exposed portion of said coated film is dissolved off, and a step in which the patterned polysilazane film formed as a result of said dissolving off is allowed to stand in an ambient atmosphere or baked to convert it to a silica-based ceramic coating, wherein said polysilazane or its modification is

a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and  $\text{R}^6$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein  $\text{R}^4$  and  $\text{R}^5$  respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, wherein



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said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester, and wherein

said photosensitive polysilazane composition further contains an oxidation catalyst.

19. (original) The method according to claim 18, wherein said oxidation catalyst is palladium propionate.